AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the

application:

LISTING OF CLAIMS:

1.   (currently amended): A method for operating an automation system comprising the steps

of:

(a) executing an application program in an automation device;

(b) selecting at least one of a plurality of data addresses to monitor during execution of

said application program;

(c) selecting a code address corresponding to said at least one of a plurality of data

addresses selected for monitoring;

(d) transmitting to the automation device, as part of a request message, the data addresses

selected for monitoring and the corresponding code address, wherein the request message

comprises a header segment, an entry data set segment, and at least one of a plurality of watch

point segments, each of said watch point segments containing at least one code address and one

data address;

(e) recording the content of the data addresses selected for monitoring when the

corresponding code address is reached during execution of the application program; and

(f) transmitting, as part of a result message, the recorded content of the data addresses

selected for monitoring.

2.   (original): The method according to claim 1, wherein said application program controls

and/or monitors an external process.

3.   (original): The method according to claim 1, wherein said code address comprises an

address of said application program in proximity to a segment of the application program that

influences the content of the data addresses selected for monitoring.

4.   (original): The method according to claim 1, wherein all memory areas existing in the

automation device, including registers, can be referenced using said plurality of data addresses.

5.   (original): The method according to claim 1, wherein the data addresses selected for

monitoring are recorded by the automation device when the corresponding code address is

reached, if a trigger condition is met.

6.   (canceled).

7.   (original): The method according to claim 1, wherein the result message has a header

segment, an entry data set segment, and at least one of a plurality of watch point segments, each

of said watch point segments containing at least one code address and one data address.

8.   (original): The method according to claim 1, wherein the data addresses selected for

monitoring are recorded by the automation device, and during execution of the application

program are transmitted to a programming device at predetermined events.

9.   (original): The method according to claim 8, wherein said predetermined events are after

each cycle when cyclical application programs are used.

10.   (original): The method according to claim 8, wherein in cyclical application programs,

the data addresses selected for monitoring are recorded by the automation device and transmitted

to the programming device in sections over several cycles.

11.   (original): The method according to claim 1, wherein instructions required for monitoring

can be masked in the application program.

12.   (original): The method according to claim 1, wherein a request job generated by the

automation device is blocked upon receipt of the request message in the case of multiple

execution of an instruction corresponding to a code defined in the request message.

13.   (original): The method according to claim 4, wherein the data addresses selected for

monitoring are recorded by the automation device when the corresponding code address is

reached, if a trigger condition is met.

14.   (currently amended): The method according to claim 1, also comprising the steps of ~~the~~

sending an acknowledgement message and a job number from the automation device to a

programming device acknowledging receipt of said request message.

15.   (currently amended): The method according to claim 1, also comprising the steps of ~~the~~

sending a release message from a programming device to said automation device to end

monitoring.

16.   (currently amended): An automation system comprising:

an automation device;

sensors providing data to said automation device;

a programming device;

a communications program that enables said automation device and said programming

device to communicate with one another; and

a computer readable medium for each of said automation device and said programming

device, on which is stored a computer program for operating and monitoring said automation

system, said computer program of said programming device storing instructions which, when

executed, will perform the steps of:

selecting at least one of a plurality of data addresses to monitor during execution of an

application program used by said automation device;

selecting a code address corresponding to said at least one of a plurality of data addresses

selected for monitoring; and

transmitting to the automation device, as part of a request message, the data addresses

selected for monitoring and the corresponding code address, wherein the request message

comprises a header segment, an entry data set segment, and at least one of a plurality of watch

point segments, each of said watch point segments containing at least one code address and one

data address; and

wherein said computer program of said automation device stores instructions which,

when executed, will perform the steps of:

executing said application program in said automation device, particularly a program to

control and/or monitor an external process;

recording content of the data addresses selected for monitoring when the corresponding

code address is reached during execution of the application program; and

transmitting to the programming device, as part of a result message, the recorded content

of the data addresses selected for monitoring.

17.   (original): The automation system according to claim 16, wherein said code address

comprises an address of said application program in proximity to a segment of the application

program that influences the content of the data addresses selected for monitoring.

18.   (original): The automation system according to claim 16, wherein all memory areas

existing in the automation device, including registers, can be referenced using said plurality of

data addresses.

19.   (original): The automation system according to claim 16, wherein the data addresses

selected for monitoring are recorded by the automation device when the corresponding code

address is reached, if a trigger condition is met.

20.   (canceled).

21.   (original): The automation system according to claim 16, wherein the result message has

a header segment, an entry data set segment, and at least one of a plurality of watch point

segments, each of said watch point segments containing at least one code address and one data

address.

22.   (original): The automation system according to claim 16, wherein the data addresses

selected for monitoring are recorded by the automation device, and during execution of the

application program are transmitted to the programming device at predetermined events.

23.   (original): The automation system according to claim 22, wherein said predetermined

events are after each cycle when cyclical application programs are used.

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24.   (original): The automation system according to claim 22, wherein in cyclical application programs, the data addresses selected for monitoring are recorded by the automation device and transmitted to the programming device in sections over several cycles.

25.   (original): The automation system according to claim 16, wherein instructions required for monitoring can be masked in the application program.

26.   (original): The automation system according to claim 16, wherein a request job generated by the automation device is blocked upon receipt of the request message in the case of multiple execution of an instruction corresponding to a code defined in the request message.

27.   (original): The automation system according to claim 16, wherein the data addresses selected for monitoring are recorded by the automation device when the corresponding code address is reached, if a trigger condition is met.

28.   (original): The automation system according to claim 16, also comprising the steps of the sending an acknowledgement message and a job number from the automation device to the programming device acknowledging receipt of said request message.

29.   (original): The automation system according to claim 16, also comprising the steps of the sending a release message from a programming device to said automation device to end monitoring.

30.   (original): The automation system according to claim 16, also comprising means for

displaying or outputting transmitted and recorded data.

31.   (new): The automation system according to claim 16, wherein the application program at

least one of controls and monitors an external process.

32.   (new): A method for operating an automation system comprising the steps of:

        (a) executing an application program in an automation device;

        (b) selecting at least one of a plurality of data addresses to monitor during execution of

said application program;

        (c) selecting a code address corresponding to said at least one of a plurality of data

addresses selected for monitoring;

        (d) transmitting to the automation device, as part of a request message, the data addresses

selected for monitoring and the corresponding code address;

        (e) recording the content of the data addresses selected for monitoring when the

corresponding code address is reached during execution of the application program; and

        (f) transmitting, as part of a result message, the recorded content of the data addresses

selected for monitoring, wherein the result message has a header segment, an entry data set

segment, and at least one of a plurality of watch point segments, each of said watch point

segments containing at least one code address and one data address.

33.   (new): A method for operating an automation system comprising the steps of:

(a) executing an application program in an automation device;

(b) selecting at least one of a plurality of data addresses to monitor during execution of said application program;

(c) selecting a code address corresponding to said at least one of a plurality of data addresses selected for monitoring;

(d) transmitting to the automation device, as part of a request message, the data addresses selected for monitoring and the corresponding code address;

(e) recording the content of the data addresses selected for monitoring when the corresponding code address is reached during execution of the application program; and

(f) transmitting, as part of a result message, the recorded content of the data addresses selected for monitoring,

wherein the data addresses selected for monitoring are recorded by the automation device, and during execution of the application program are transmitted to a programming device at predetermined events, and

wherein in cyclical application programs, the data addresses selected for monitoring are recorded by the automation device and transmitted to the programming device in sections over several cycles.

34.   (new): A method for operating an automation system comprising the steps of:

(a) executing an application program in an automation device;

(b) selecting at least one of a plurality of data addresses to monitor during execution of said application program;

(c) selecting a code address corresponding to said at least one of a plurality of data addresses selected for monitoring;

(d) transmitting to the automation device, as part of a request message, the data addresses selected for monitoring and the corresponding code address;

(e) recording the content of the data addresses selected for monitoring when the corresponding code address is reached during execution of the application program; and

(f) transmitting, as part of a result message, the recorded content of the data addresses selected for monitoring,

wherein a request job generated by the automation device is blocked upon receipt of the request message in the case of multiple execution of an instruction corresponding to a code defined in the request message.

35.   (new): An automation system comprising:

an automation device;

sensors providing data to said automation device;

a programming device;

a communications program that enables said automation device and said programming device to communicate with one another; and

a computer readable medium for each of said automation device and said programming device, on which is stored computer program for operating and monitoring said automation

system, said computer program of said programming device storing instructions which, when

executed, will perform the steps of:

selecting at least one of a plurality of data addresses to monitor during execution of an

application program used by said automation device;

selecting a code address corresponding to said at least one of a plurality of data addresses

selected for monitoring; and

transmitting to the automation device, as part of a request message, the data addresses

selected for monitoring and the corresponding code address; and

wherein said computer program of said automation device stores instructions which,

when executed, will perform the steps of:

executing said application program in said automation device;

recording content of the data addresses selected for monitoring when the corresponding

code address is reached during execution of the application program; and

transmitting to the programming device, as part of a result message, the recorded content

of the data addresses selected for monitoring, wherein the result message has a header segment,

an entry data set segment, and at least one of a plurality of watch point segments, each of said

watch point segments containing at least one code address and one data address.

36.   (new): An automation system comprising:

an automation device;

sensors providing data to said automation device; a programming device;

a communications program that enables said automation device and said programming

device to communicate with one another; and

a computer readable medium for each of said automation device and said programming

device, on which is stored computer program for operating and monitoring said automation

system, said computer program of said programming device storing instructions which, when

executed, will perform the steps of:

selecting at least one of a plurality of data addresses to monitor during execution of an

application program used by said automation device;

selecting a code address corresponding to said at least one of a plurality of data addresses

selected for monitoring; and

transmitting to the automation device, as part of a request message, the data addresses

selected for monitoring and the corresponding code address; and

wherein said computer program of said automation device stores instructions which,

when executed, will perform the steps of:

executing said application program in said automation device;

recording content of the data addresses selected for monitoring when the corresponding

code address is reached during execution of the application program; and

transmitting to the programming device, as part of a result message, the recorded content

of the data addresses selected for monitoring,

wherein the data addresses selected for monitoring are recorded by the automation

device, and during execution of the application program are transmitted to the programming

device at predetermined events, and

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wherein in cyclical application programs, the data addresses selected for monitoring are

recorded by the automation device and transmitted to the programming device in sections over

several cycles.

37.   (new): An automation system comprising:

an automation device;

sensors providing data to said automation device;

a programming device;

a communications program that enables said automation device and said programming

device to communicate with one another; and

a computer readable medium for each of said automation device and said programming

device, on which is stored computer program for operating and monitoring said automation

system, said computer program of said programming device storing instructions which, when

executed, will perform the steps of:

selecting at least one of a plurality of data addresses to monitor during execution of an

application program used by said automation device;

selecting a code address corresponding to said at least one of a plurality of data addresses

selected for monitoring; and

transmitting to the automation device, as part of a request message, the data addresses

selected for monitoring and the corresponding code address; and

wherein said computer program of said automation device stores instructions which,

when executed, will perform the steps of:

executing said application program in said automation device;

recording content of the data addresses selected for monitoring when the corresponding

code address is reached during execution of the application program; and

transmitting to the programming device, as part of a result message, the recorded content

of the data addresses selected for monitoring,

wherein a request job generated by the automation device is blocked upon receipt of the

request message in the case of multiple execution of an instruction corresponding to a code

defined in the request message.